**[0033]** In this embodiment, a partial program guide can be generated from the information in the program guide database 108 and the channel map database 110. The partial program guide is then sent to the terminal 100 along with the audio signal. The receiver 100 then generates the assembled program guide as described above and outputs the assembled program guide to the processor 106 for generating the optimized configuration data.

**[0034]** Application of the inventive system is not limited to the examples above, but can be used in any device and/or system that reproduces more than one audio channel as well as any system that generates or transmits an audio signal. Some examples of where the invention can be used include enhancing AM and FM stereo transmissions, BTSC/MTS (Broadcast Television Systems Committee/Multi-channel Television Sound) stereo analog transmissions, cable and satellite transmissions, CDs, DVDs, internet audio, etc. and the source mastering for the transmission media. For example, in view of ongoing efforts to transition from analog AM and FM transmissions to standardized digital broadcast signals, the same optimization techniques described above can be applied to the digital transmissions (e.g., by transmitting the configuration data long with the digital audio data). Additionally, the invention can be incorporated into CD's and DVD's, which already contain digital data and have space available for other data; in this application, the audio configuration data, its location and format on the disk, and the specific control interface implementation would need to be determined and standardized through known methods.

**[0035]** The configuration data itself can take any form that is accessible by the delivery channel, control interface, and audio equipment to provide the necessary information for optimizing audio reproduction. As explained above, the configuration data can be included in additional fields in program guide data or in an event information table. Another option is to include the configuration data as metadata in formats that provide locations for storing metadata. Metadata is generally defined as any data that is related to a program but is not the program itself, such as information about the

production environment and acoustical space, dialog level, dynamic range information, intellectual property rights, etc. Note that if a particular format provides metadata that includes many different information fields, the program guide data and/or event information table can be enhanced to include as much information as the format providing the metadata, thereby providing the option of extended information for all services delivered through the system, whether or not its format specifically includes the extended metadata. Thus, even existing program content can be modified according to the invention so that it contains as much information as program content that is generated with the metadata in the first place. Further, the invention makes the metadata and/or the extended information available to all devices along the signal transmission chain so that the devices can respond to the information and optimize the audio reproduction environment accordingly.

**[0036]** As a result, the present invention allows home theatre equipment to receive audio data and automatically configure the equipment to optimize audio reproduction and ensure that the sound is reproduced in the best possible manner based on the audio data's parameters as well as the capabilities/limitations of the data delivery channel and the user's own equipment. The invention creates a "plug-and-play" system that can provide the end user with the best possible audio reproduction by automatically detecting information regarding the audio source and delivery channel, determining the optimal equipment configuration in view of the limitations of the delivery channel and equipment, and automatically configuring the system based on this information. Because the configuration is automatic, the inventive system optimizes sound reproduction without requiring any action or any specialized knowledge on the part of the user.

**[0037]** Further, the present invention takes advantage of available data fields in digital carriers of audio information by ensuring that these data fields contain audio production information and that the information is maintained throughout the distribution channels so that a user's home audio equipment can respond to the information. The invention also provides a defined mechanism to describe audio parameters for analog

recordings and analog distribution mechanisms. Although the above examples specified various specific delivery channels, the invention can be applied to any delivery channel, including but not limited to television broadcasts, radio broadcasts, satellite or other wireless delivery, DSL (which includes all variants, such as ADSL and XDSL) delivery, Internet delivery, and cable delivery. The invention can also be used for any audio source, such as audio CDs, digital television programs, and DVDs.

**[0038]** As a result, the invention proposes providing sufficient data in the data fields to allow fully automated control and optimization of the listener's environment, without any knowledge or input required from the user.

**[0039]** While the invention has been specifically described in connection with certain specific embodiments thereof, it is to be understood that this is by way of illustration and not of limitation, and the scope of the appended claims should be construed as broadly as the prior art will permit.